

NEW YORK UNIVERSITY MEDICAL CENTER
NEW YORK UNIVERSITY SCHOOL OF MEDICINE
550 FIRST AVENUE, NEW YORK 16, N. Y.

DEPARTMENT OF BIOCHEMISTRY

OREGON 9-3200

November 15, 1962

Dr. F. H. C. Crick
Laboratory of Molecular Biology
University Postgraduate Medical School
Hills Road
Cambridge, England

Dear Francis:

Thank you for your note of October 22. When the Nobel Prize for Medicine was announced, I was in Cordova, Argentina, and I was very happy to hear the good news. I had gone to Argentina accompanied by my wife on a short lecture trip. They had a beautiful spring there and we had a wonderful time.

I also want to thank you for your earlier letter, of September 21, and the preprint of your review on the code for Progress in Nucleic Acid Research. At that time, we had already analyzed many of the polymers used in our work and I understand that you have seen the data sent by Lengyel to Bretscher. We have recently obtained exciting new data as we found that poly A stimulates the incorporation of lysine and appears to direct the synthesis of polylysine. This made it possible to make A-rich non-U polymers and we got a number of code triplets without U for several amino acids. I am enclosing the preprint of a paper that we have submitted to the National Academy. It looks therefore as if the code is pretty degenerate although I am not sure yet whether some kind of doublet code as proposed by Roberts could not account for the results. The enclosed sheet lists the U- and non-U triplets we have obtained so far and you can see that several of them share doublets. Therefore, in the case, let us say, of histidine it may be that ^{for} AUC and ACC only the AC doublet is meaningful so that a single rather than a degenerate code is in fact involved. The final criterion for degeneracy of the code for each amino acid might well

have to be based on whether there is one or more transfer RNA's specific for this amino acid.

With best regards, as always,

Yours,

A handwritten signature in dark ink, appearing to read 'Severo Ochoa', with a stylized flourish at the end.

Severo Ochoa

SO:mak